



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/617,749	07/17/00	MCKINNEY	J CLEARSTRM-6

IM22/1201

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EXAMINER

BARRY, C

ART UNIT

PAPER NUMBER

1724

DATE MAILED:

6
12/01/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/617,749

Applicant(s)

MCKINNEY, JERRY

Examiner

Chester T. Barry

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 7/17/00, 9/5/00, protest of 10/30/00.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
- ☐ received.
 - ☐ received in Application No. (Series Code / Serial Number) _____.
 - ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,5.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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Manner of Making Amendments

The insertions to the specification made July 17, 2000, are objected to under 37 CFR 1.121(b)(1)(iii) for want of underlining below the subject matter added.

Claims 11 - 24 are objected to under 37 CFR 1.121(b)(2)(i)(C) for want of underlining below the subject matter added. See also 37 CFR 1.121(b)(2)(i)(A)'s discussion of (b)(2)(i)(C).

Broadening and Recapture

Applicant in this application seeks reissue of U.S. Pat. No. 5785854 to McKinney. Claim 1 is broader than patent claim 1¹ at least for the reasons that "aeration system" is not limited to the corresponding structure described in the specification for performing the stated function (or to §112, sixth, equivalents thereof) because this element is not drafted in means-plus-function format, whereas the patent claim 1 element, "means for injecting an oxygenation gas into the water," clearly was limited to such structures or §112, sixth, equivalents.

Broadening is permissible in this application because this reissue application was filed within 2 years of the date the patent issued.

Recapture does not appear likely to become an issue in this application because no rejections were made nor any claim scope narrowing amendments filed during prosecution of the patent. See application serial no. 08/892681.

Comments on Protest

On this record, there is no basis for rejecting any pending claim under 35 U.S.C. §102(g). Applicant may comment on Protester's statement, but is not required to do so. The examiner requests that no negative inference be drawn from Applicant's failure to comment on Protester's allegation of the propriety of a §102(g) rejection.

¹ Claims of this application shall be referred to simply as "claim" followed by the claim number, whereas claims of the patent will be referred to as the corresponding "patent claim."

Protester's statement² that Hydro-Action's products "have been on sale in the United States for over one year" is not probative of unpatentability at least for the reason that applicant's effective filing date predates 10/30/99, i.e., one year prior to the date Protester made the statement. Furthermore, there is no admission by Hydro-Action that its products in fact fall within the scope of any pending claim. Hence, on this record, no "on-sale bar" rejection under §102(b) can be made.

Protester's allegation of applicant's violation of 37 CFR 1.56 is noted without further comment.

The letter to Hydro-Action, Inc., from Clearstream Wastewater Systems, Inc., dated Aug. 2, 2000, is not prior art, nor does it discuss any knowledge shown to be prior art.

The "Biological Wastewater Treatment" reference is discussed below.

35 U.S.C. 102 - Anticipation

a) §102(a)

Contrary to Protester's suggestion,³ no claim is rejected under 35 U.S.C. §102(a). It has not been shown through competent evidence that applicant reverse engineered Protester's product before filing the application which matured into the patent undergoing reissue. Accordingly, no rejection under §102(a) is deemed appropriate on this record.

² Protest, 10/30/00, p.5

³ Protest, 10/30/00, page 5.

b) §102(b) - McKinney '470

Claims 1, 5, 9, 11 - 24 are rejected under §102(b) as being anticipated by printed publication U.S. Pat. No. 5221470, issued in June, 1993, to McKinney ("McKinney '470"), more than one year before applicant's effective US filing date of July 14, 1997. McKinney '470⁴ describes a cylindrical flat-bottomed⁵ aerobic waste water treatment tank having an inverted clarifying cone and effluent discharge port therein. The aerator mechanism includes two downwardly depending flexible hoses disposed within rigid conduits. At the ends of the hoses are diffusers 40 for sparging small air bubbles into the liquid. The spargers are located close to the bottom of the chamber (col 2 line 56) and adjacent to the outside walls of the tank (col 2 line 3). The two hoses 38 branch off from a common air line 48 separately valved by valves 42 and 44. The bubbling air suspends solid particles in the chamber. The reference teaches that when a diffuser plugs up for whatever reason, an air hose (sic, singular) needs to be removed for repair or replacement. The hose is disconnected from the valve manifold and simply pulled out of the rigid conduit in which it is located and out of the tank through opening 14 (col 2 line 66 – col 3 line 10).

The skilled artisan would have understood from the foregoing that the unit was not intended to be taken out of service while the ill-functioning diffuser was being replaced or repaired. First, there is no description of shutting off process feed to the

⁴ McKinney '470 was cited to and considered by the examiner prior to issuance of the '854 patent.

⁵ Vessel 10 has a flat bottom wall notwithstanding the placement of a conic deflector 27 placed at the center of the interior (wetted) surface of that vessel bottom wall. See, for example, Fig. 1. The exterior (soil contacting) bottom surface of the vessel is clearly substantially flat.

vessel during the repair procedure. Second, the flow through the vessel is gravity-driven based on inflow from the residence or other waste source. There is no discussion of depriving the source of waste treatment capacity during the air hose replacement. Furthermore, the skilled artisan would have understood the importance of maintaining air flow through the remaining, functioning air hose in order to continue aerating the wastewater. There is no discussion of shutting down the supply of air during the hose replacement. The provision of three shut off valves or a three-way valve is clearly intended to allow for operation of the chamber without taking the unit off-line throughout the air hose replacement procedure.

To the extent that applicant's invention accomplishes forcing into circulation "all solids suspended within the [wastewater treatment] plant," the apparatus described by applicant's earlier patent '470 is deemed to accomplish the same since both disclosures rely on aeration from a single diffuser located near the intersection of the bottom and side walls.

McKinney '470, including Fig. 3 thereof, does not describe or suggest that the conduit run parallel to the inverted cone partition, as in claim 6.

Per claim 3, McKinney '470 describes an embodiment in which a deflector cone 27 on the interior (wetted) bottom wall of the vessel 10 is positioned underneath the lower opening of the inverted cone. It is clear that at least some liquid flows "under the opening" because the hydrostatic head in the aeration chamber causes liquid to flow from the aeration chamber into the clarifier chamber through the opening. This current flow does not, however, appear to proceed "across the bottom wall" under the opening

at least for the reason that the deflector cone's diameter is greater than that of the clarifier opening, thereby precluding all current flow "across the bottom wall under the opening."

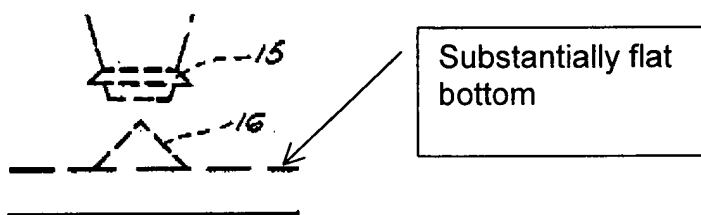
c) §102(b) - Nolen

Claims 9, 11 – 15, 22 are rejected under §102(b) as being anticipated by U.S.

Pat. No. 4,983,285 to Nolen.

i) Claims 9, 22

Nolen describes an aerobic wastewater treatment plant having an aeration chamber containing aerobic bacteria. The vessel includes a substantially flat bottom



wall and a cylindrical side wall. Placement of an apparently separable deflector cone 16, perhaps made from metal, on the substantially flat bottom concrete wall does not render the vessel's bottom wall not substantially flat.⁶ The vessel contains aerobic bacteria. The aerobic bacteria appear to convert the wastewater to water, CO₂, and solids. The vessel includes an inverted partition clarifier chamber, the truncated cone of

⁶ In contrast, each of the tank or receptacle structures described in the patents listed below does not have a substantially flat bottom:

U.S. Pat. No. 6105812 for "Dual chamber container," to Riordan (not prior art);

U.S. Pat. No. 5837139 for "Fluid collecting and dividing apparatus," to Lerch;

U.S. Pat. No. 4247012 for "Bottom structure for plastic container for pressurized fluids" to Alberghini;

U.S. Pat. No. 3973693 for "Containers for containing carbonated beverages" to Brocklehurst; and

U.S. Pat. No. 3722726 for "Noneverting Bottom for Thermoplastic Bottles" to Carmichael.

which is located above the substantially flat bottom wall near where the deflector cone is placed. An outlet pipe leads clarified water from the vessel.

An aeration system, including one of the four vertical aeration tube legs 28, releases oxygen in air from an air source into the wastewater. The system appears to “provid[e] sufficient flow such that all solids suspended within the plant are forced into circulation,” as required by claim 9.⁷ As shown in Fig. 1, the aeration tubes are located close to the intersection of the bottom wall and side wall. Whereas Applicant’s “aeration system” reads on one of Nolen’s vertical legs, 28, Applicant’s limitation “means for injecting an oxygenation gas into the wastewater” reads on Nolen’s three other vertical aerator tube legs 28. In the specification, applicant describes “three drop lines for air.”⁸ This “means plus function” limitation recited in claim 9 reads on the “three drop line” structure described in applicant’s specification because it is a structure described as performing the recited function even though it is a prior art structure. Clearstream Wastewater Systems Inc. v. Hydro-Action Inc., 54 USPQ2d 1185 (Fed. Cir. 2000).

Per claim 22, the aeration system includes multiple diffusers, specifically, four diffusers.

ii) Claims 11 – 15

⁷ The fact that the settled solids in “dead spots” are not in circulation does not matter. The claim requires only that the solids **that are suspended** be forced into circulation. Almost by definition, suspended solids more dense than the solid-free fraction of the wastewater itself are **forced** into circulation. It is only the solids that are about as dense as the wastewater itself which do not require currents or circulation to remain suspended.

⁸ McKinney, column 2 lines 60-61.

Nolen also describes the vessel, inlet, partition, outlet, injection system, and source of air for the injection system, as recited in claim 11. Per claim 12, a diffuser 28 adjacent the bottom / side wall intersection is connected to the air source. Per claim 13, multiple diffusers adjacent the bottom / side wall intersection connected to the air source are described. Per claim 14, Fig. 2 shows a tubular line connecting the four vertical legs 28 to an air supply. Per claim 15, tubular lines 27 connect the multiple diffusers of claim 13 to an air supply.

d) §102(e) - McGrew '818

Claims 11 – 15 are rejected under §102(e) as being clearly anticipated by McGrew '818.

Per claim 11, McGrew '818 describes an aeration apparatus (Abstract, "aeration chamber") for use in an aerobic wastewater treatment plant, comprising: a vessel 3 defining an aeration chamber 23, the vessel 3 comprising a cylindrical side wall and a substantially flat, bottom wall 5; an inlet 10 into the aeration chamber; a partition 7 positioned in the vessel and defining a clarifier chamber, the partition being in the form of an inverted, truncated cone having a bottom opening 8 facing the bottom wall, an outlet 20 from the clarifier; and an injection system 17 (Fig. 3) in the aeration chamber, the injection system creating an injection area adjacent



the intersection of the side wall and the bottom wall, and a source of air 12 for the injection system.

Per claim 12, the injection system McGrew '818 describes includes at least one diffuser disposed adjacent the intersection of the side wall and the bottom wall, said diffuser being connected to the source of air through lines 14, 15, 16.

Per claim 13, the injection system McGrew '818 describes includes multiple diffusers (Fig. 2) disposed adjacent the intersection of the side wall and the bottom wall, the diffusers being connected to the source of air through lines 14 – 16.

Per claim 14, the injection system McGrew '818 describes includes a tubular line 14, 15, or 16 connected between at least one of the diffusers 19, 19 and the source of air 12.

Per claim 15, the injection system McGrew '818 describes includes tubular lines connected between at least one of the diffusers 19, 19 and the source of air 12.

e) §102(f)

Contrary to Protester's suggestion,⁹ no claim is rejected under 35 U.S.C.

§102(f). It has not been shown through competent evidence that Protester is a co-inventor of any pending claim in this application. Accordingly, no rejection under §102(f) is deemed appropriate on this record.

f) §102(g)

Contrary to Protester's suggestion,¹⁰ no claim is rejected under 35 U.S.C.

§102(g). The letter from Clearstream to Hydro-Action is not material to patentability at least for the reason that it is not prior art. Further, it is not seen how any statement made in that letter suggests any rejection based on 35 U.S.C. §102(g) insofar as there is no evidence of record that the invention as claimed was "made" in this country before July 14, 1997 (applicant's presumed date of invention absent proof of an earlier date). While the McKinney '470 patent *described* the invention of at least one claim before the constructive date of invention, there is no evidence in that patent publication that the anticipating description was actually *constructed* in this country at any time prior to the filing of the McKinney '470 patent.

Moreover, applicant's failure to indicate Protester as a co-inventor, even if it were proven that Protester is in fact a co-inventor of the claimed subject matter, does not give rise to a rejection under 35 U.S.C. §102(g).

⁹ Protest, 10/30/00, page 5.

¹⁰ Protest, 10/30/00, page 4.

35 U.S.C. §103(a) - Obviousness

a) McGrew '818 in view of McKinney '470

Claims 16/14 and 16/15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrew '818 in view of McKinney '470. It would have been obvious to have provided conduits and flexible tubular air lines and shut-off valves to facilitate repair or replacement of clogged diffusers, as suggested by McKinney '470, in order to avoid process downtime and to ease removal of the defective tines from the chamber.

b) "Clearstream® When Experience Counts™

Claims 1, 3 – 5, 7 – 24 are rejected under §103(a) as being obvious over applicant's admission that the reference cited by applicant, "Clearstream® When Experience Counts™", is "admitted prior art." The brochure (as a printed document) clearly describes each feature of the invention, specifically, the single aerator feature, but bears no publication date. The trademark database shows that Applicant's date of first use in commerce for the "CLEARSTREAM – When Experience Counts" mark was May 13, 1997, less than one year prior to applicant's effective filing date. Hence, the brochure does not appear to be a prior art publication either on its face or when viewed in conjunction with the trademark registration date of first use in commerce. Accordingly, these claims are not rejected under §102.

However, applicant admits the brochure is "admitted prior art" (see the IDS filed 9/5/00). Accordingly, since the brochure describes the invention, and since admissions are available as prior art through §103 but not through §102, In re Nomiya, these claims

are rejected under §103 even though there do not appear to be any "differences" between the disclosed subject matter and the claims.

Applicant is requested to clarify why they believe the brochure to be prior art. Does it evidence a prior sale or offer of sale or use prior to 7/14/96? Or was the publication "published" before 7/14/96? Applicant may also wish to consider the ramifications, if any, to your trademark registration since the brochure appears to use the trademark "CLEARSTREAM – When Experience Counts."

c) Admitted Prior Art in view of McKinney '470
Claims 1, 3 - 6 are rejected under §103(a) as being obvious over the admitted prior art in view of McKinney '470.

Various patented¹¹ or pending claims are drafted in Jepson claim format ("in a ... the improvement comprising"). Accordingly, the preamble is taken as an implied admission of prior art.¹² To ascertain the scope of the admission in claim 6, in section (i) below the recitations of claim 1, upon which claim 6 depends indirectly through claims 2 – 5, will first be identified as either further limiting of the admitted preamble structure or of the improvement structure thereof. In section (ii), the scope of pending claim 6 will be compared to that of the admission.

i) Scope of Admission Portion of Patent Claim 6

The full text of claims 1 – 6 can be found in the patent. Jepson format Claim 1 is structured as follows: An admitted prior art preamble followed by recitation of the

¹¹ The '854 patent under reissue.

¹² Please see MPEP §2129.

improvement thereof. In sum, the admitted prior art waste water treatment plant includes:

an aeration chamber containing aerobic bacteria into which wastewater containing organic solids flows to be exposed to aerobic bacteria to convert the organic solids in the wastewater to water and CO₂, said aeration chamber having a bottom and side walls, means for injecting an oxygenation gas into the wastewater in the aeration chamber to support growth of the aerobic bacteria, and

a clarifier chamber into which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber.

On the other hand, the improvement includes:

a diffuser for releasing the oxygenation gas as bubbles into the aeration chamber of the wastewater treatment plant, said diffuser providing sufficient flow such that all solids suspended within the plant are forced into circulation, said diffuser being placed close to the bottom of the aeration chamber of the wastewater treatment plant and close to the side wall of the aeration chamber, said diffuser providing sufficient oxygenation gas to allow the aerobic bacteria to convert the wastewater into CO₂ and water.

The table beginning on the next page summarizes which structural elements of device patent claim 6 are directed to the prior art devices that is admitted as prior art, and which are directed to the inventive improvement thereof.

Prior art elements	Improvement elements	Dependent claim limitations
<p>Wastewater treatment plant:</p> <p>aeration chamber having a bottom and side walls and aerobic bacteria</p> <p>means for injecting an oxygenation gas into the wastewater in the aeration chamber to support growth of the aerobic bacteria, i.e., per §112(6), <u>all</u> structures described in the specification and equivalents thereof</p> <p>clarifier chamber defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber</p>		<p>Substantially flat bottom wall (patent claim 2)¹³</p> <p>Injection means comprises: a drop line connecting an external oxygenation source and the diffuser (patent claim 4);</p> <p>A rigid conduit mounted to the inside of the wastewater treatment plant for receiving and firmly securing the drop line such that the drop line extends from the oxygenation source towards the bottom of the plant (patent claim 5); wherein</p> <p>The rigid conduit extends generally parallel to the partition and from there generally to the Bottom of the wastewater treatment plant such that the rigid conduit is intimately connected to the partition (patent claim 6)¹⁴</p>
	<p><u>diffuser placed close to the bottom of the aeration chamber and close to the side wall of the aeration chamber</u></p>	<p>current flow pattern (patent claim 3)¹⁵</p>

¹³ While patent claim 2 does not clarify whether the substantially flat bottom wall limitation further defines the admitted prior art structure or the improvement thereof, applicant's inclusion of the "vessel . . . having a substantially flat bottom wall" limitation in the preamble portion of claim 1 as amended (preliminary amendment, July 17, 2000) resolves that question.

¹⁴ The "drop line" and "rigid conduit" limitations appear to fall within the scope of the admitted structure because "means for injecting" is recited in the preamble rather than the "improvement clause." §112(6) requires that such a "means plus function" elements necessarily cover at least all structures described in the specification capable of performing the recited function, e.g., the drop line of patent claim 4 and rigid conduit of claim 5 and claim 6.

¹⁵ Insofar as the current pattern of patent claim 3 appears to be a consequence of the placement of the diffuser at the bottom near the wall, this limitation appears to relate to the improvement rather than to the admitted prior art device.

ii) Comparison of Pending Claim 6 with Admitted Structure

A comparison of the scope of pending claim 6 with the scope of the admitted prior art wastewater treatment plant appears to reveal the following differences in scope:

1) pending claim 6 requires that the structure have a cylindrical side wall whereas the patent does not reveal an admission that the prior art structure had a cylindrical side wall;

2) pending claim 6 recites an "aeration system" rather than a "means for injecting" as admitted in the patent; and

3) placement of the diffuser close to the bottom wall and close to the side wall of the aeration chamber.

Neither of differences no. 1 and no. 2 distinguishes the structure of pending claim 6 over the admitted structure. With respect to difference no. 1, applicant in this reissue application has admitted that the prior art "vessel" includes not only a substantially flat wall, but also a cylindrical side wall. See applicant's inclusion of this "vessel" limitation in the preamble rather than the "improvement" clause of pending claim 1.¹⁶ With respect to difference no. 2, any one of applicant's prior art "means for injecting" structures meets the "aeration system" limitation of pending claim 6, i.e., the latter reads on the former.

Accordingly, but for placement of the diffuser close to the bottom wall and close to the side wall of the aeration chamber, and the wastewater current flow of claim 3

¹⁶ Preliminary amendment, July 17, 2000.

resulting therefrom in use, the wastewater treatment plant of pending claim 6 is indistinguishable from the wastewater treatment plant impliedly admitted by applicant to have been within the prior art at the time the '854 patent application was filed.

As noted above, McKinney '470 describes an aerator mechanism including two downwardly depending flexible hoses disposed within rigid conduits. At the ends of the hoses are diffusers 40 for sparging small air bubbles into the liquid. The spargers are located close to the bottom of the chamber (col 2 line 56) and adjacent to the outside cylindrical wall of the tank (col 2 line 3). The two hoses 38 branch off from a common air line 48 separately valved by valves 42 and 44. The bubbling air suspends solid particles in the chamber. McKinney '470 teaches that when a diffuser plugs up for whatever reason, an air hose (sic, singular) needs to be removed for repair or replacement. The hose is disconnected from the valve manifold and simply pulled out of the rigid conduit in which it is located and out of the tank through opening 14 (col 2 line 66 – col 3 line 10). The diffusers are close to the bottom and side walls.

It would have been obvious to have used two vertically descending aerator drop lines in place of the "means for injecting" of the wastewater treatment plant admitted in the '854 patent to be within the scope of the prior art because McKinney had previously shown that as few as two aerator drop lines were sufficient to effect adequate aeration. It would have been obvious also to have installed the noted air shut-off valves so that the equipment could remain on-line even when one line clogged for whatever reason, as suggested by McKinney '470.

35 U.S.C. §112(2) – Particularity of Claims

Claims 1, 3 – 24 are rejected under §112, second paragraph, for failing to particularly point out and distinctly claim the subject matter for which applicant seeks a reissued patent. Claim 1 states that the bacteria covert organic solids to water and carbon dioxide. It is unclear if this limitation requires that these bacteria convert the organic solids to only water and organic solids, or if aerobic bacteria that convert the organic solids to biomass as well as to water and carbon dioxide would meet this element of the claims. U.S. Pat. No. 5951867 to Blough, U.S. Pat. No. 6086765 to Edwards, U.S. Pat. No. 5494581 to Hobson, and U.S. Pat. No. 5800705 to Downs are cited for teaching that aerobic bacteria convert organic compounds in waste, including solids, to biomass, water, and carbon dioxide.

Claims 4 – 6 refer to “said oxygenation gas injecting means” even though claim 3 fails to recite this element.

Claims 14 – 15 refer to “said diffuser” whereas the claim from which it depends refers to either “at least one diffuser” or “multiple diffusers” (plural). It’s unclear which of the plural diffusers claims 14 – 15 refer.

Claim 17 refers back to “diffuser system” even though claim 1 from which claim 17 depends fails to recite a diffuser system. The examiner presumes that “aeration system” was intended in claim 17. Correction is required.

Protester’s allegations to the contrary, (Protest, 10/30/00, page 4, line 6), claim 1 and others reciting “aeration area” do not fail to particularly point out and distinctly claim the invention by virtue of recitation of “aeration area.” Absolute precision in the wording

of claims, while desirable, would be an unreasonable burden to impose on an inventor. All that is required is that the applicant set forth with a reasonable degree of precision the subject matter sought to be patented. The plain meaning of "aeration area" is an area that is aerated. That is, in this case, any portion of the waste water in close proximity to air bubbles. Claim 1, for example, does not recite that an "aeration system" is located at an aeration area, but rather that the aeration system "forms" an aeration area "adjacent" the intersection of the side and bottom wall and which forces circulation of suspended solids. The intersection, of course, as set forth at applicant's Fig. 1, is the circle (shown as an ellipse in perspective view) at which the cylindrical side wall and flat bottom wall met. The "aeration area . . . adjacent the intersection" is the loci of points adjacent that circle at which air bubbles can be found.¹⁷ The word "adjacent" is at least as precise as the subject matter will reasonably require.

Applicant may use different terms to mean basically the same thing. Hence, "injection area" and "injection system." No scope confusion is introduced for this factor alone. It is clear that there is no *ipsis verbis* support for "injection system" in the original disclosure, but such is not required by §112(2). Since the skilled artisan would have understood that applicant's diffuser "injects" air into the liquid wastewater, applicant may use the expression "injector system" if he wishes.

Claim 19 recites a "diffuser system" not recited in either of claims 18 and 7.¹⁸

¹⁷ These comments apply equally to "injection area."

¹⁸ Note that claim 18 depends from claim 7, not claim 17.

Per claim 7, it is unclear by which structural features the “means for injecting an oxygenation gas” and “means to generate a wastewater current in the aeration chamber” are distinguishable because it appears from the disclosure as originally filed that only one disclosed structure, a diffuser or plurality of diffusers (limited by col 3 lines 51-60), performs each function. That is, under §112(6), “means for injecting an oxygenation gas” and “means to generate a wastewater current in the aeration chamber” each read only on a diffuser or plurality of diffusers, and equivalents thereof. See also the §112(1), description, rejection.

Per claim 10, it is unclear by which structural features the “means for injecting an oxygenation gas” and “aeration system” are distinguishable because it appears from the disclosure as originally filed that only one disclosed structure, a diffuser or plurality of diffusers (limited by col 3 lines 51-60), performs each function. That is, under §112(6), “means for injecting an oxygenation gas” is supported only by a diffuser or plurality of diffusers, while aeration system is also supported only by a diffuser or plurality thereof. See also the §112(1), description, rejection.

Per claims 11 – 24, the insertion at column 5 line 37 obfuscates the otherwise clear meaning of “source of air for [the] injection source” and “diffuser system.” The plain meaning of a source of air for the injection source, as recited in claim 11, is the air source described in the original application, e.g., an air compressor. For the insertion to column 5 line 37 to list the “diffuser system” as an example of the air injection source¹⁹ allows the following confusing construction of claim 14: “An aeration apparatus . . .

wherein a tubular line is connected between said diffuser and said [diffuser system].” Similarly, the added statement at column 5, “multiple aeration sources, e.g., multiple diffusers 40,” also renders claim 11 confusing in scope. The skilled artisan would have understood applicant’s use of the term “source” to mean a place external to the aerobic chamber and clarifier from which a quantity of oxygen-containing gas could be obtained. To suggest that a diffuser is an example of such a source unreasonably detracts from the otherwise reasonably precise scope of claims 11 – 24. Correction of the text insertion to column 5 to resolve this ambiguity is required.

35 U.S.C. §112(2) – Claims Not Directed to Applicant's Invention

Claims 12 – 17, 19, 21, 22, 24 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant regards as his invention. Evidence that these claims fail to correspond in scope with that which applicant regards as his invention can be found in the original disclosure at col 3 lines 30 – 60. In the application as filed, applicant distinguished his invention using exactly one diffuser from prior art aeration systems in which two or more diffusers were used. Applicant regarded a multiple diffuser system as falling within the scope of what he regarded as his invention only those systems in which one diffuser failed to provide a sufficient amount of oxygen to the fluid. Failure to limit these claims reciting more than one diffuser to aeration tanks or processes for which a) one diffuser alone delivers insufficient oxygen and b) multiple diffusers do not form dead spots created by

¹⁹ “[T]he air injection source, e.g., a diffuser system,”

interference patterns, would result in applicant claiming an invention he did not regard as his own. Adding a limitation to these claims to the effect that the aerator or process is one for which one diffuser alone cannot deliver a sufficient amount of oxygen (or the like) and in which dead spots are not created would overcome this rejection.

Claims 12 – 17, 19, 21, 22, 24 specifically recites more than one diffuser. These claims are not supported by the original disclosure because one of ordinary skill in the art would not have understood applicant to have been in possession of this invention generally, but rather only in situations in which one diffuser was inadequate to deliver a sufficient amount of oxygen. See col. 3 lines 50 – 60. Not a single original claim in application 08/892,681 recites more than one diffuser or drop line. Every instance of "diffuser" in the claims reads as "a diffuser." In light of column 3 of the patent, the skilled artisan would have understood that in this case, by "a diffuser" in both the written description and the original claims, applicant meant "one and only one diffuser," not "at least one diffuser" the transitional phrase "comprising" notwithstanding. See Elkay Mfr. Co. v. Ebco Mfr. Co., 52 USPQ2d 1109 (Fed. Cir. 1999) and AbTox Inc. v. Exitron Corp., 43 USPQ2d 1545 (Fed. Cir. 1997), but see KCJ Corp. v. Kinetic Concepts, Inc., No. 99-1248 (Fed Cir. 8/18/2000). See also The Gentry Gallery Inc. v. The Berklene Corp., 45 USPQ2d 1498 (Fed. Cir. 1998).

35 U.S.C. §112(1) - Description

The specification is objected to, and Claims 7, 18, 19, 9, 22, 10, 23, 24 and 12 – 17, 21 are rejected, under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Per claims 7 and 10, the specification fails to provide an adequate written description of structural corresponding to “means for injecting an oxygenation gas” and also an adequate written description of structural corresponding to “means to generate a wastewater current in the aeration chamber.” Based on the original disclosure, the skilled artisan would not have understood applicant to have been in possession of a first structure capable of performing the “injecting an oxygenation gas” function and a different, second structure capable of performing the “generat[ing] a wastewater current in the aeration chamber” function because only one disclosed structure, the diffuser (or plurality thereof) is disclosed as performing both of these functions.

Similarly, per claim 9, the specification fails to provide an adequate written description of structural corresponding to “means for injecting an oxygenation gas” and also an adequate written description of a different structure upon which “aeration system” reads. Based on the original disclosure, the skilled artisan would not have understood applicant to have been in possession of a first structure capable of performing the “injecting an oxygenation gas” function and a different, second “aerator system” structure.

Each of claims 12 – 17, 19, 21, 22, 24 specifically recites more than one diffuser. These claims are not supported by the original disclosure because one of ordinary skill in the art would not have understood applicant to have been in possession of this invention generally, but rather only in situations in which one diffuser was inadequate to deliver a sufficient amount of oxygen and in which multiple diffusers do not form dead spots created by interference patterns. See col. 3 lines 30 – 60. Not a single original claim in application 08/892,681 recites more than one diffuser or drop line. Every instance of "diffuser" in the claims reads as "a diffuser." In light of column 3 of the patent, the skilled artisan would have understood that in this case, by "a diffuser" in both the written description and the original claims, applicant meant "one and only one diffuser," not "at least one diffuser" the transitional phrase "comprising" notwithstanding. See Elkay Mfr. Co. v. Ebco Mfr. Co., 52 USPQ2d 1109 (Fed. Cir. 1999) and AbTox Inc. v. Exitron Corp., 43 USPQ2d 1545 (Fed. Cir. 1997), but see KCJ Corp. v. Kinetic Concepts, Inc., No. 99-1248 (Fed Cir. 8/18/2000). See also The Gentry Gallery Inc. v. The Berkline Corp., 45 USPQ2d 1498 (Fed. Cir. 1998). Adding a limitation to these claims to the effect that the aerator or process is one for which one diffuser alone cannot deliver a sufficient amount of oxygen (or the like) and in which dead spots are not created would overcome this rejection.

35 U.S.C. §132 – New Matter Objection

The amendment filed 7/17/00 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment

shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The insertion to col3 line 60.

The added matter relates to the multiple diffuser embodiment of a diffuser system. First, the scope of applicant's invention for which support is had will be reviewed. Then, the subject matter that goes beyond the original disclosure will be identified.

There is descriptive support in the original disclosure for a diffuser "system" because the original disclosure teaches that in limited circumstances,²⁰ more than one diffuser could be used. Beginning at col 3 line 31, the patent reads:

The introduction of diffused oxygenation gas or air in a single location close to the bottom and the side wall of an aeration chamber produces a defined current or circulation pattern which generally maintains all solids in circulation and forces all fluid within a wastewater treatment plant into motion, overcoming dead spots created by interference patterns when two or more diffuser locations are used. The diffuser location . . . forces a specific current or pattern of circulation which sweeps fluid from every portion of the plant such that solids will remain well mixed in solution instead of accumulating as sludge. . . . In a preferred embodiment, an external oxygenation gas source supplies oxygenation gas, preferably air, through a flexible drop line or air line to the diffuser for release into the aeration chamber. . . . While the diffuser location can be a single location close to the side wall and near the bottom of the wastewater treatment plant, a preferred embodiment includes placing the diffuser close to the side wall and close to the bottom such that the diffuser is substantially below the wastewater treatment plant inlet. When multiple air lines and diffusers must be used to provide sufficient quantities of oxygen, a preferred embodiment includes grouping . . . diffusers in close proximity below the wastewater treatment plant inlet.

²⁰ Applicant understood that if one diffuser could deliver enough oxygen, then his invention related to the use of just one diffuser. It is only in an alternative situation in which only an insufficient amount of oxygen could be delivered by just one diffuser, then applicants understanding of his invention expanded to cover multiple diffusers. Please see the rejection of claims under §112(1), description in which Gentry is cited.

(emphasis supplied).

The addition of matter to column 3 at line 60 goes beyond this disclosure. It provides support for the following embodiment having no support in the original disclosure: Creation of upward currents by the multiple diffusers of a branched current having a first and second run at the surface of the liquid in the aeration chamber. There is ample support for the creation of currents 102 and 104, but only one upward current is suggested by the original specification. That is, the added matter provides support for horizontal separation of, say, two diffusers to such an extent that two distinct upward currents are created thereby. There is no original support for this concept. While there is support for two diffusers positioned "close" to each other, e.g., on the order of about 3 – 4 inches apart,²¹ there is no support for concluding from this disclosure that the diffusers were horizontally separated to such an extent that two distinct upward currents (rather than a coalesced single upward current) would be created. Moreover, with respect to the text insertion at column 5, applicant's statement that "multiple diffusers [40] could be positioned in sufficient proximity to one another such that upward current flows . . . produced the flow paths indicated by 102 and 104" (emphasis added) is new matter. By virtue of using the word "could" rather than "must be positioned . . . such that an upward current flow . . .,"²² the statement artfully but improperly suggests that applicant was in possession of placement of multiple diffusers

²¹ Col 5 line 52.

²² Or, "are positioned . . . such that an upward current flow . . . "

that were not necessarily located so close together that they produced only one upward current flow. The original disclosure supports placement of multiple diffusers only so close as to form a single upward flowing current.

Per the textual matter added to column 5, applicant states:

assuming that direction 100 in Fig. 1 depicts the current flow of the wastewater induced at an injection area adjacent the intersection of the side wall and the bottom wall of the aeration chamber . . .

This statement, if originally filed, would have given the skilled artisan a basis to conclude that applicant understood the term "adjacent" to read on placement of a diffuser as far above the bottom wall as element number 100 is shown in Fig. 1. Consideration of this added passage in view of Fig. 5 would allow applicant later in this proceeding to claim, for example, "a diffuser at an elevation higher than that of the clarifier bottom opening." Also, consideration of this added passage in view of Fig. 1 would allow applicant later in this proceeding to claim, for example, "a diffuser at an elevation that is closer to the vessel lid than to the bottom wall." Insofar as there is no other foundation in the original disclosure for this broad construction of the word "adjacent" in the application, and in light of the impermissible "stepping stone" consequences which might result from its entry into the record, it is objected to for introduction of new matter.

Applicant is required to cancel the new matter in the reply to this Office Action.

35 U.S.C. §251 – New Matter

Claims 7, 18, 19, 9, 22, 10, 23, 24 and 12 – 17, 21 are rejected under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is described in the section addressing §112, first paragraph, description objections and rejections, and 35 U.S.C. §132 objections.

37 CFR 1.175 - Defective Reissue Oath

The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414. While the oath states that the patentee claimed "more or less" than the patentee had a right to claim, applicant has not specified in what respect "more or less" (in this case, less), was claimed than applicant had a right to claim.

Furthermore, the reissue oath/declaration filed with this application is defective because it fails to contain a statement that all errors which are being corrected in the reissue application up to the time of filing of the oath/declaration arose without any deceptive intention on the part of the applicant. See 37 CFR 1.175 and MPEP § 1414.

Accordingly, claims 1, 3 – 24 are rejected as being based upon a defective reissue oath under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175. The nature of the defect(s) in the oath is set forth in the discussion above in this Office action.

Allowable Subject Matter

No claim is allowable.

Comments on Art and Citations of Interest

McGrew '818 clearly suggests adoption of the several spaced-apart air drop perforated tubes in order to obviate the need for a sludge deflector cone, as in McKinney '470, for example, but the resulting structure does not appear to meet the current flow path limitations recited in claim 3 or claim 7.

Per claim 6, U.S. Pat. No. 3618779 to Goodman teaches attachment of the air diffuser onto a clarifier/aeration chamber baffle/separator, but the septic tank does not have a cylindrical wall. In translating the diffuser-placement teachings from the Goodman geometry to that of a cylindrical geometry, such as that shown by McKinney '470, for example, the skilled artisan would have been motivated to place a perforated tube ring along the radially-outward side of the clarifier inverted tube opening, not just at one location beneath the wastewater feed inlet. Nor would such combination be expected to result in the flow current path described in claim 3.

U.S. Pat. No. 5618445 to Gavin does not suggest substitution of a cone attached to the underside of the inverted cone of McKinney '470 in lieu of a sludge deflector cone attached directly to the interior (wetted) surface of the tank vessel. If there were any teaching in the prior art suggesting this modification, then current flow across the bottom wall under the clarifier bottom opening would likely result.

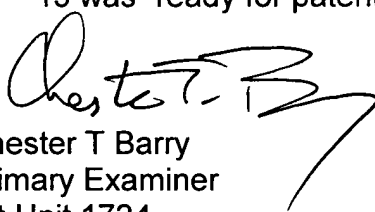
U.S. Pat. No. 4834879 and U.S. Pat. No. 4664795 to Stegall are cited for teaching an aeration system having one vertical leg directly below the waste feed inlet and two diffusers establishing a rolling solids suspending action.

Grady et al., "Biological Wastewater Treatment: Theory and Applications," Marcel Dekker, New York, 1980: Fig. 1.1, specifically Illus. A-1, does not describe or suggest in combination with any prior art reference(s) of which the examiner is aware, any claim of this application. Fig. A-1 does not show a "bottom-located aerator" notwithstanding Protester's comments (Protest, 10/30/00, page 2). The schematic representation of a mixer impeller in a tank does not mean the mixer impeller is placed at the "bottom." Rather, it shows a conventional stirrer in a tank (CSTR). The section 1.1, "Criteria for Classification," does not describe or suggest in combination with any prior art reference(s) of which the examiner is aware, any claim of this application. Chapter 12, directed to CSTRs, pages 365-366, does not describe or suggest in combination with any prior art reference(s) of which the examiner is aware, any claim of this application. Chapter 17, directed to aerobic digestion, pages 689-690, does not describe or suggest in combination with any prior art reference(s) of which the examiner is aware, any claim of this application. The textbook does not show that complete mixing in an aerobic digester having an inverted cone type clarifier chamber by bubbles was known since at least 1980. Equation 17.24, directed to the amount of air required for mixing and aeration carried out by bubble diffusion, would be of greater interest vis-à-vis the patentability of the pending claims only if the full citation to Reynolds (reference 5) were provided so that the scope of applicability of this formula could be ascertained.

U.S. Pat. No. 3,883,427 to Oldham, cited by Protester, describes an aeration chamber having but one diffuser 33, but the vessel does not have a cylindrical side wall, as required by all pending claims.

U.S. Pat. No. 5874002 to Cormier is cited to show it was known in the art to use pyramid-shaped deflector cones (col 3 line 59).

CD 1/29/00
The "Class I Aerobic Systems" brochure describes a flat bottomed cylindrical side wall vessel having an inverted truncated conic clarifier partition. The diagrams show a wastewater inlet and clarified water outlet. The air injection system includes three air diffusers located near the intersection of the bottom wall and side wall (see PLAN view, last page). An air pump ("air source") is described (see "process description" section; or "air pump" section). The brochure appears to evidence merely an invitation for offers of sale rather than an offer of sale. There is no evidence of record suggesting that the device depicted in the brochure was the subject of an offer of sale. The brochure does not appear to be a "printed publication" at least for the reason that there is no evidence that the brochure was catalogued or otherwise searchable by subject matter by a person of skill in the art. The diagrams in the brochure show that the invention of claims 11 – 15 was "ready for patenting" as early as 1994.


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